UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: PCB inputs into the Duwamish River DATE: 10/6/74

FROM: J. N. Blazevich JNB

TO: F. Nelson, Chief
Technical Support Branch

On July 12, 1974 a meeting concerning determination of sources of PCB in the Duwamish River was held at Metro's 410 West Harrison facility (see memo J. B. August 7. 1974). General agreement with Metro personnel and others present led to the following actions:

(1) Metro personnel sampled suspect storm-sewer interceptors.
(2) EPA Region X personnel sampled sediments next to suspect input sources (e.g. near industrial outfalls).
(3) EPA Region X personnel performed necessary analytical work on both sets of samples.

The work is now complete and the results are shown in Tables 1 and 2. Maps of the areas sampled are attached to help locate sampling sites.

Results from Table 1 indicate low levels of PCBs in Lander Street interceptor sediments, moderate concentrations in those of Harbor and Chelan Street, and high values in samples taken from Brighton Street and Hanford Street interceptors. A special note is warranted regarding the Brighton Street sample in which copious quantities of an unidentified material were found to be present. Further analysis by GC/MS is necessary.

Of interest are the results of samples taken from slip 4, a receiving area of Boeing Co. surface runoff and City Light industrial discharge. There is a substantial increase in PCB concentrations in the sediments as one approaches the east end of the slip. This strongly suggests that a source either current or historical exists in the area.

The area at the foot of Myrtle Street shows moderate PCB levels that are two to three times higher than mid-channel values. The same is true of sediments taken between the drydocks of Duwamish Shipyards Inc. One may conclude that possible PCB inputs exist at these points. The shipyard input sources could be related to the use of PCBs in marine paints. If so, this source would be difficult to control unless the practice of adding PCBs to marine paints is curtailed.

Near background levels of PCBs were found at the foot of Brighton and Lander Streets, in sediments taken from the Black and Green Rivers (Orillia Bridge) and in the upper Duwamish turning basin.

It is of interest to compare PCB values of sediments of corresponding interceptor and outfall areas. It is reassuring to find low PCB levels in sediments taken from the foot of Lander Street and the interceptor that empties into the area, but it is puzzling to see low PCB levels at the foot of Brighton Street when interceptor values are high. The apparent

discrepancy may be explained if one considers possible localized concentrations in the area. Since only one sediment sample was taken in the receiving area, sediments containing higher PCB levels may have been missed. This explanation is reinforced when one examines PCB levels in sediments taken in the recent PCB spill area at slip one. Here PCB levels change from 3% to 0.2 ppm in less than 300 feet.

The above results indicate the following:

(1) Sources of PCBs appear to exist at each of five locations: Brighton and Hanford Streets, the Duwamish Shipyards, slip 4 and Myrtle Street.
(2) Possible sources of PCBs exist near Lockheed Shipyards and at Chelan and Harbor Streets.
(3) There appears to be little input from the Black and Green Rivers.
(4) Future work is necessary to determine if identified sources are historical or current and to identify other possible pollutants using the GC/MS technique.

copy: Arnold R. Gahler

TABLE I

LOCATION	LOCATION	PCB in ppm * 1242	1248/54	TOTAL
31010 Sed	Chelan Street	1.15	0.97	2.12
31011 Sed **	Brighton St.	5.0	20.2	25.2
31012 Sed	Harbor Street	0.9	0.6	1.5
31013 Sed	Hanford Street	15.9	3.36	19.26
31014 Sed	Lander Street	0.25	0.28	0.53

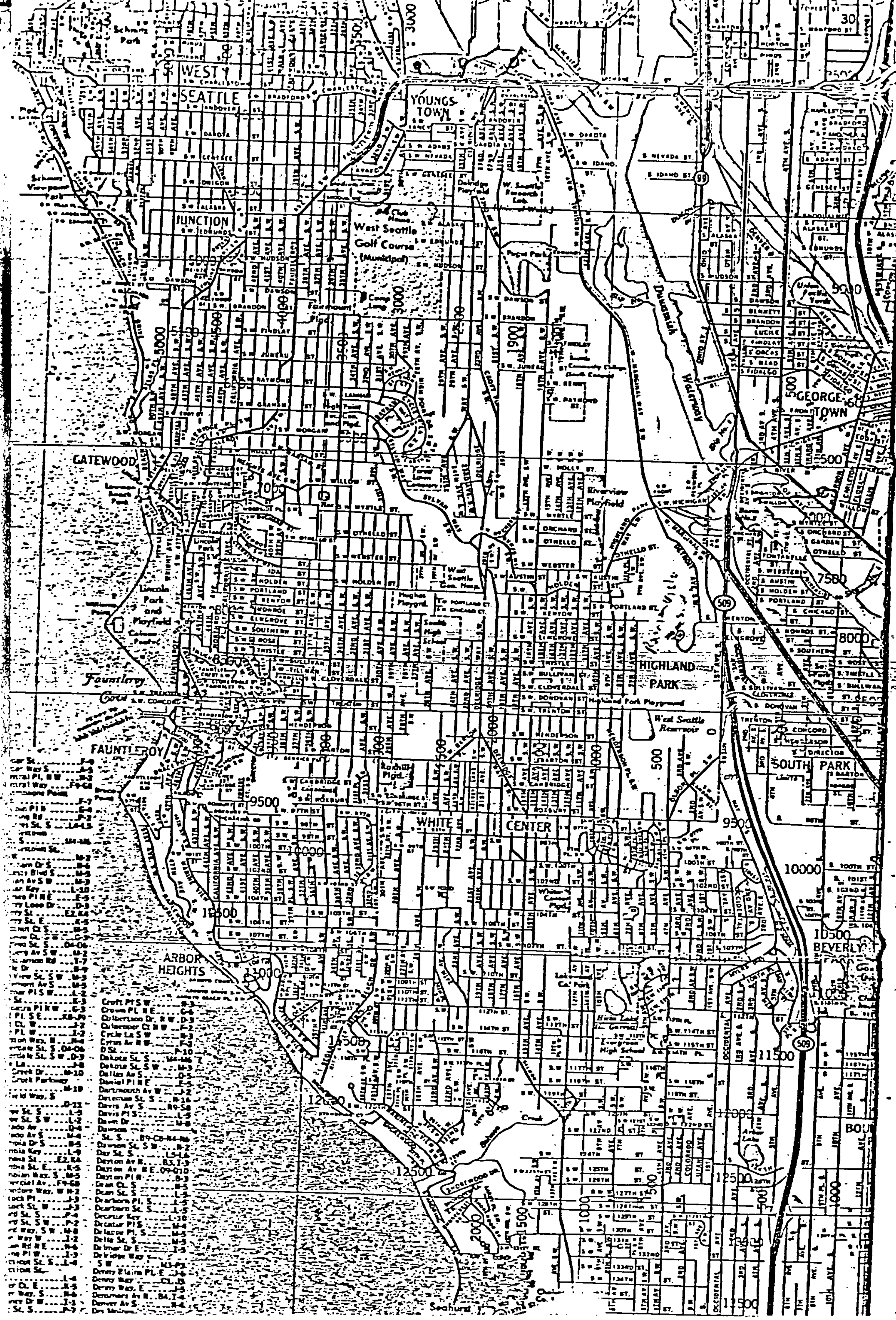
* Wet weight

** Large quantities of material with a retention time near Endrin were observed - further GC/MS work is needed.

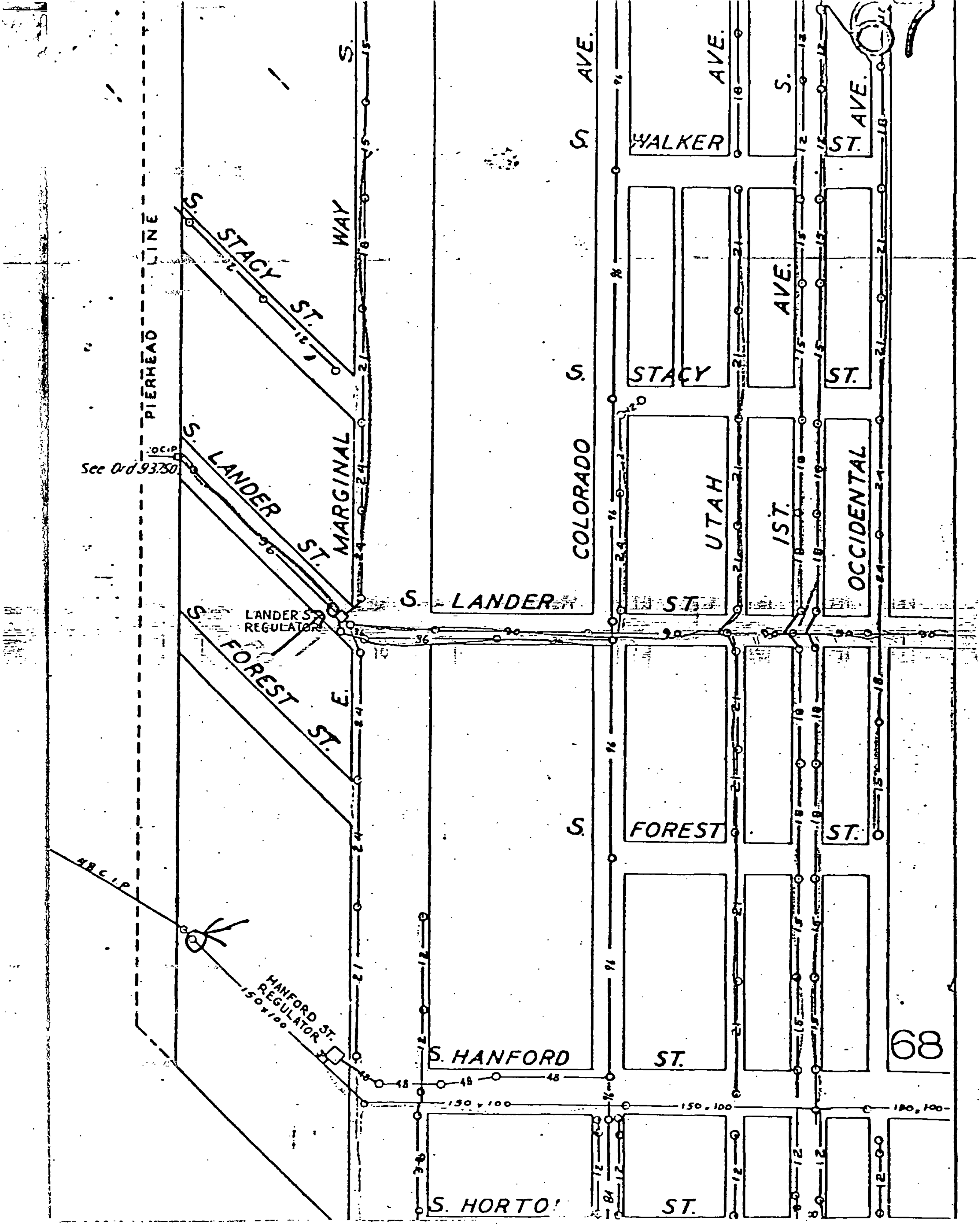
TABLE II

LABORATORY NO.	STATION NO.	LOCATION	PCB in ppm * 1242	1248/54	TOTAL
33010 Sed	DB #0	Mid Channel off Boeing Developmental Center	0.12	0.14	0.26
33016 Sed	DB #1	Lander Street-West Water Way	-	0.28	0.28
33017 Sed	DB #2	100 + 00 - West Side Duwamish River	0.35	2.0	2.35
33018 Sed	DB #3	Foot of Brighton Street East Side of Duwamish R.	-	0.18	0.18
33019 Sed	DB #4	Foot of Myrtle Street Duwamish River	-	1.55	1.55
33020 Sed	DB #5	Slip 4 off Hydraulic supply pier	0.5	2.3	2.8
33021 Sed	DB #6	146 + 00 - West Side of River (Orchard Street)	lost sample		
33022 Sed	DB #7	Innermost - Water - slip 4	-	9.4	9.4
33023 Sed	DB #8	Black River at pump station	0.11	0.28	0.39
33024 Sed	DB #9	Orillia Bridge	-	-	-
33025 Sed	DB #10	West Side - West Water Way at Lockheed	0.11	1.86	1.97

* Wet weight



Schmitz Park
WEST SEATTLE
YOUNGS-TOWN
JUNCTION
West Seattle Golf Course (Municipal)
Delridge Playfield
Fairmount Plgd
GEORGE-TOWN
GATEWOOD
Riverview Playfield
Duwamish Waterway
Lincoln Park and Playfield
Hughes Playgrd.
South High School
HIGHLAND PARK
Highland Park Playground
West Seattle Reservoir
Fauntleroy Cove
FAUNTLEROY
SOUTH PARK
Roxhill Plgd.
WHITE CENTER
White Center Plgd.
ARBOR HEIGHTS
BEVERLY
Lakewood Co. Park
Seahurst



PIERHEAD LINE
S. STACY ST.
S. LANDER ST.
S. FOREST ST.
See Ord 93750
LANDER ST. REGULATOR
HANFORD ST. REGULATOR 150 x 100
48 C.I.P.
S. MARGINAL WAY
E. MARGINAL WAY
S. LANDER ST.
S. HANFORD ST.
S. HORTO ST.
S. COLORADO AVE.
S. WALKER ST.
S. STACY ST.
S. FOREST ST.
UTAH AVE.
S. UTAH AVE.
IST. AVE. S.
OCCIDENTAL AVE.
150 x 100
68

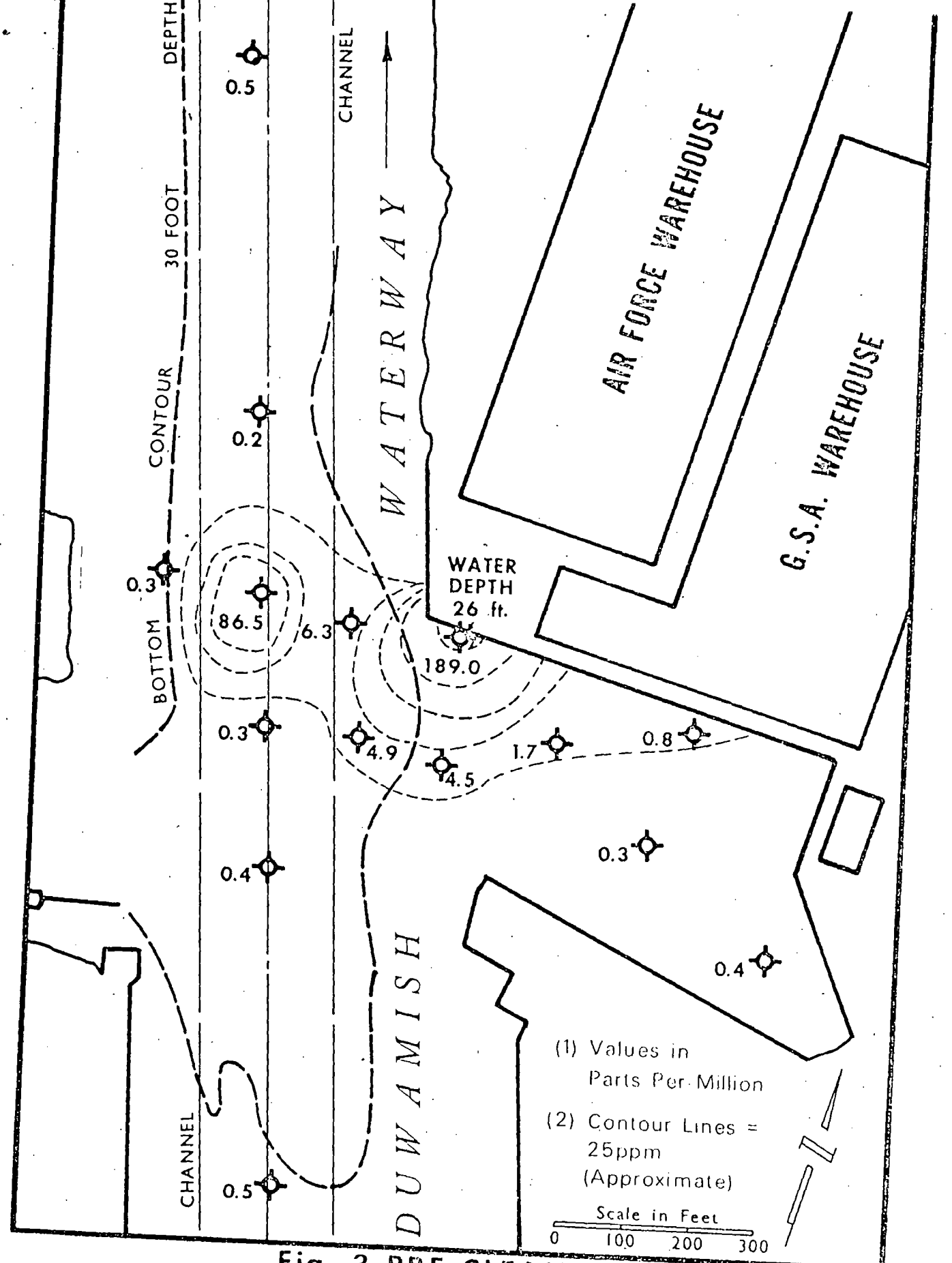


Fig. 3 PRE-CLEANUP (Sept. 18, 1974)
P.C.B. SEDIMENT CONCENTRATION

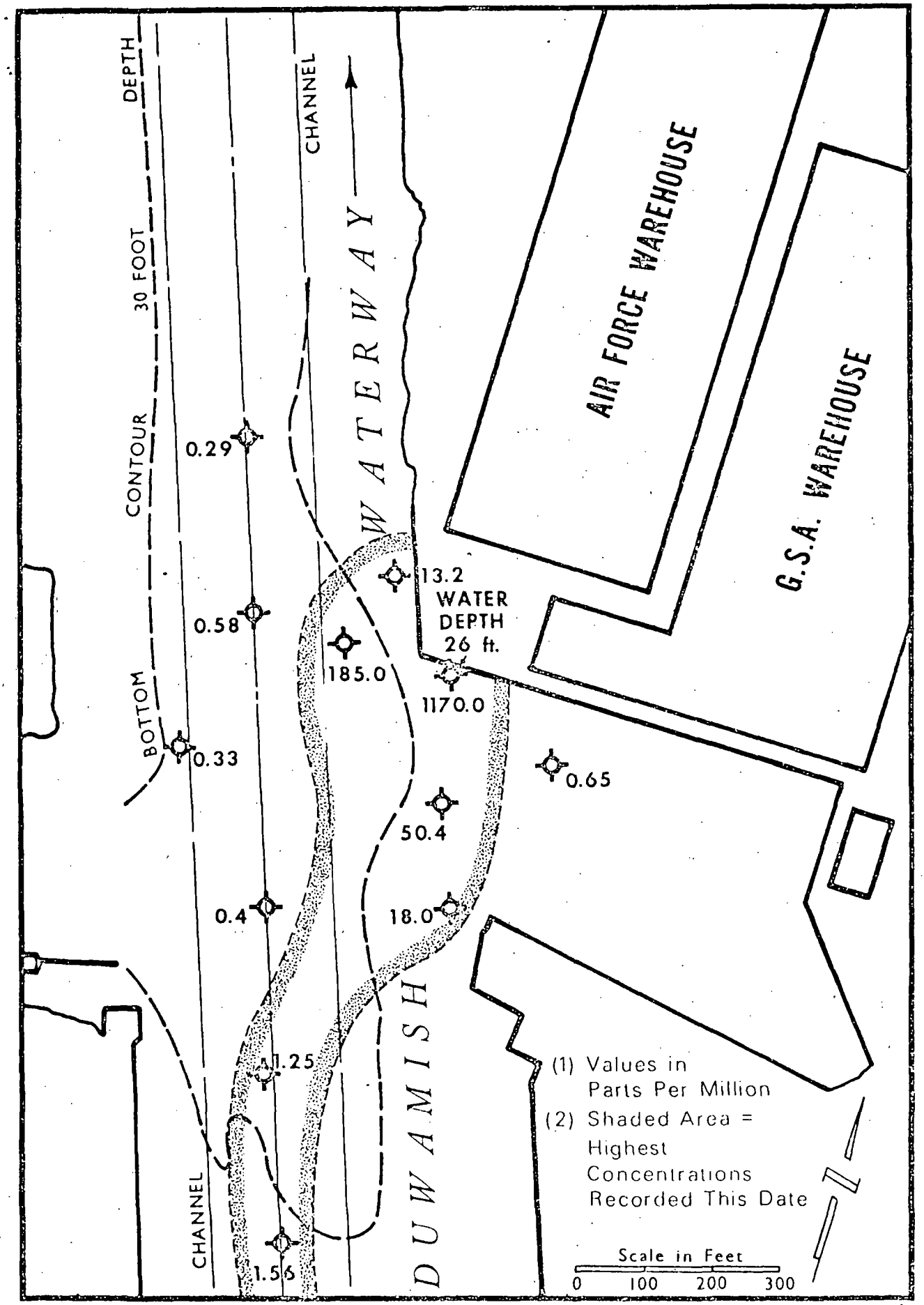


Fig. 4 POST CLEANUP (Nov. 4, 1974)
P.C.B. SEDIMENT CONCENTRATION

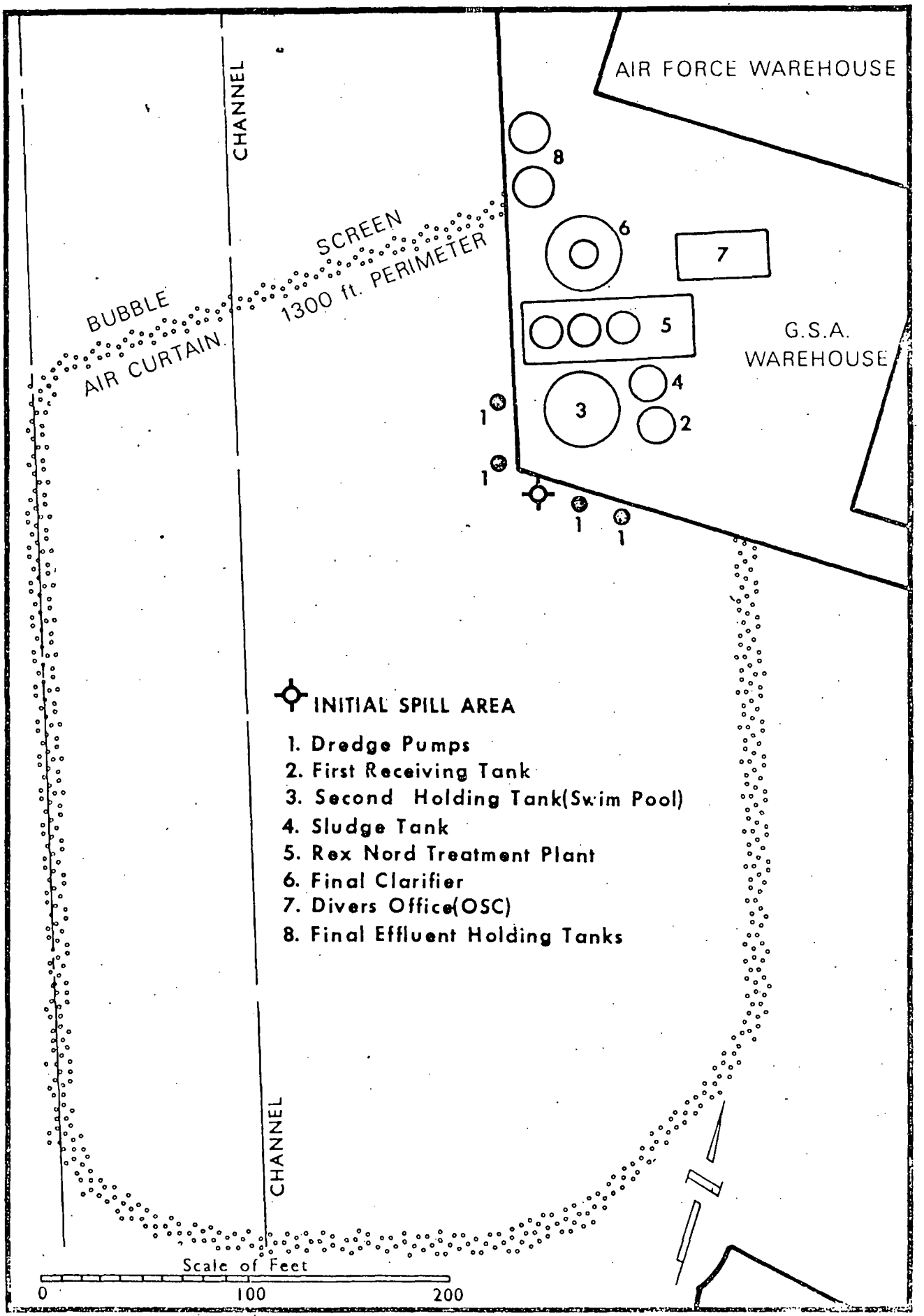


Fig. 2 DISPOSITION OF SPILL RECOVERY EQUIPMENT

TABLE 1

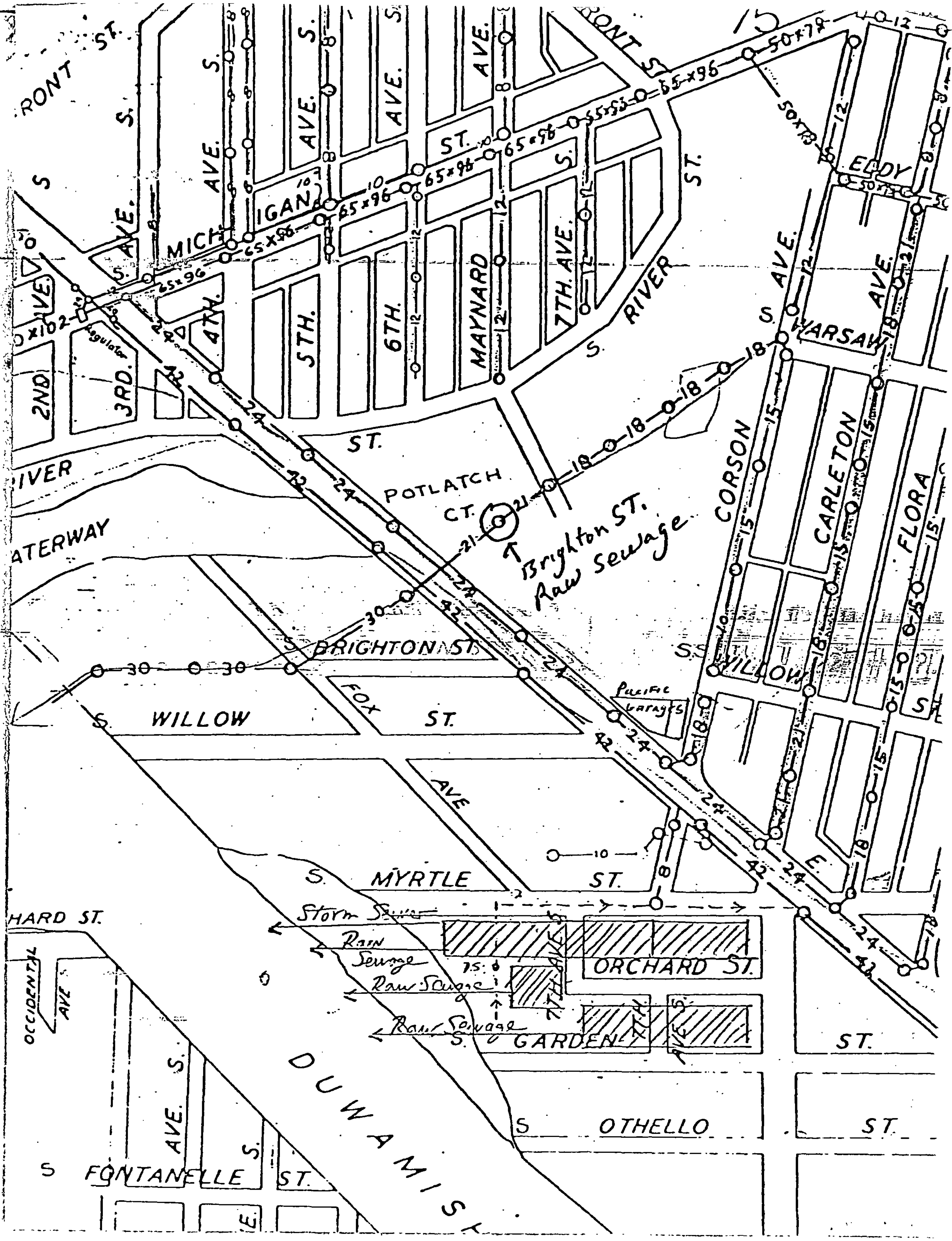
INITIAL TREATMENT PLANT RESULTS

First Settling Tank	400 parts per billion
Second Settling Tank (Swimming Pool)	400 parts per billion
After Sand Filter	3.5 parts per billion
Final Effluent after Carbon Columns	75 parts per trillion

SLUDGE CONCENTRATIONS

Low	4 parts per thousand
High	30 parts per thousand

Average - 1 - 2% PCB in Barreled Sludge



15
FRONT ST.
S. 8th AVE. S.
MICHIGAN
65x96
50x72
EDDY
S. RIVER ST.
2ND
3RD.
4TH.
5TH.
6TH.
MAYNARD
7TH. AVE.
S. WARSAW
S. AVE.
Regulator
RIVER
WATERWAY
POTLATCH CT.
Brighton ST. Raw Sewage
CORSON
CARLETON
FLORA
S. BRIGHTON ST.
S. WILLOW
FOX ST.
AVE
S. WILLOW
Pacific Garages
E.
S. MYRTLE ST.
ORCHARD ST.
Storm Sewer
Rain Sewage
Raw Sewage
Raw Sewage
7TH AVE.
S. GARDEN ST.
OCCIDENTAL AVE
DUWAMISH
S. OTHELLO ST.
S. FONTANELLE ST.
AVE. S.